

**WE CLAIM:**

- 1           1.     A phase-shift mask, comprising:
  - 2                 at least one first pattern, the first pattern being arranged in a two-dimensional
  - 3                 matrix with a multiple of second patterns, the second patterns being substantially identical
  - 4                 to the first pattern, the first pattern including:
    - 5                     at least a first portion having
    - 6                     i)   a first area,
    - 7                     ii) a first transmission of electrical field strength of light, to be
    - 8                     irradiated through the mask, and
    - 9                     iii) a first phase-shift exerted on light traversing the mask through the
    - 10                    first portion, and at least a second portion having
    - 11                    i)   a second area,
    - 12                    ii) a second transmission of electrical field strength of light to be
    - 13                    irradiated through the mask, and
    - 14                    iii) a second phase-shift exerted on light traversing the mask through the
    - 15                    second portion, the second phase-shift being different from the first phase-shift,
    - 16                    wherein the product of the first area of the first portion times the first transmission
    - 17                    is substantially equal to the product of the second area of the second portion times the
    - 18                    second transmission, and the first and second transmission are different with respect to
    - 19                    each other.
- 1           2.     The phase-shift-mask according to claim 1, wherein a third portion of the
- 2                 first pattern is not transparent for light.

1           3.     The phase-shift-mask according to claim 1, wherein a first width of the  
2     first portion and a second width of the second portion extend in a first direction, the ratio  
3     of the first width to the second width being different from 1, and a first length of the first  
4     portion and a second length of the second portion extend in a second direction, the second  
5     direction being orthogonal to the first direction, the ratio of the first length to the second  
6     width being different from 1.

1           4.     The phase-shift mask according to claim 1, wherein each of the portions of  
2     the first pattern is symmetric about at least one axis.

1           5.     The phase-shift mask according to claim 2, wherein each of the portions of  
2     the first pattern is symmetric about two orthogonal axes.

1           6.     The phase-shift mask according to claim 1, wherein the first portion  
2     comprises a square, and the second portion comprises a set of four lines bordering and  
3     enclosing four sides of the square of the first portion.

1           7.     The phase-shift mask according to claim 1, wherein the first portion  
2     comprises a first sub-pattern being a U-shaped, the second portion comprises a second  
3     sub-pattern being U-shaped, open ends of the U-shapes are orientated towards each other,  
4     the first portion comprises a third rectangular sub-pattern, which is enclosed on three  
5     sides by the second sub-pattern of the second portion, the second portion comprises a

6 fourth rectangular sub-pattern, which is enclosed on three sides by the first sub-pattern of  
7 the second portion.

1 8. The phase-shift mask according to claim 1, wherein the first and second  
2 transmission are larger than 45 percent of the irradiated light.